

TAXONOMIC NOTES ON *LEPANTHES DISTICHA*
(ORCHIDACEAE: PLEUROTHALLIDINAE) AND ITS ALLIES IN MEXICO AND
NORTHERN CENTRAL AMERICA

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RESUMEN

En este trabajo se encontró que en las especies de *Lepanthes* con vainas negras de México y el norte de Centroamérica la forma del ápice de la hoja está correlacionada con otras características morfológicas y con el color de las flores. *Lepanthes nigriscapa* R. E. Schult. & G. W. Dillon, *L. quetzalensis* Luer & Béhar y *L. scopula* Schltr. presentan el ápice de la hoja redondeado-agudo y el apéndice del labelo poco evidente, ya sea con una porción sólida de menos de 0.1 mm de largo o reducido a un mechón de pelos, mientras que *L. inaequiloba* Ames & C. Schweinf. tiene hojas similares pero carece completamente del apéndice. *Lepanthes nigriscapa* es conocido solamente del tipo y se distingue por la total ausencia de un apéndice sólido y los sépalos laterales muy divergentes. Plantas con hojas acuminadas y un apéndice prominente y piloso fueron descritas por A. Richard y Galeotti como *Pleurothallis disticha*, concepto posteriormente transferido a *Lepanthes* por Garay y R. E. Schultes. *Lepanthes oestlundiana* R. E. Schult. & G. W. Dillon y *Lepanthes pristidis* Rchb. f. se consideran aquí como sinónimos de *L. disticha*. Material de Belice citado como *Lepanthes inaequiloba* Ames & C. Schweinf. y de Guatemala como *L. turialvae* Rchb. f., es referido a *L. disticha*. Otra especie con hojas acuminadas y vainas negras, *Lepanthes hondurensis* Ames, aparentemente endémica de Honduras, está cercanamente relacionada con *L. disticha* pero difiere en los lóbulos de los pétalos subiguales, ampliamente elípticos o redondeados y el apéndice glabro. Se presenta la tipificación y la sinonimia de las especies y se incluye una clave para su identificación.

ABSTRACT

The terminal shape of the leaf was found to be correlated with other morphological features and with flower colour in the group of *Lepanthes* with black sheaths from Mexico and northern Central

America. Plants with rounded-acute leaf tips, and the appendix inconspicuous and either with a solid portion less than 0.1 mm long or reduced to a tuft of hairs include *Lepanthes nigriscapa* R. E. Schult. & G. W. Dillon, *L. quetzalensis* Luer & Béhar and *L. scopula* Schltr.; *L. inaequiloba* Ames & C. Schweinf. has similar leaves but lacks entirely an appendix. *Lepanthes nigriscapa* is known only from the type material and is distinguished by a total absence of a solid appendix as well as by its divergent lateral sepals. Plants with acuminate leaves and prominent hairy appendix were first described by A. Richard and Galeotti as *Pleurothallis disticha* and later transferred to *Lepanthes* by Garay and R. E. Schultes. *Lepanthes oestlundiana* R. E. Schult. & G. W. Dillon and *L. pristidis* Rchb. f. are best treated as synonyms of *L. disticha*. Material reported as *Lepanthes inaequiloba* Ames & C. Schweinf. from Belize and as *L. turialvae* Rchb.f. from Guatemala is all referable to *L. disticha*. Another species with acuminate leaves and black sheaths, *Lepanthes hondurensis* Ames, apparently endemic to Honduras, is closely related to *L. disticha*, but differs in having the lobes of the petals subequal, broadly elliptic or rounded, and a glabrous appendix. Typification, synonymy and a key to the species are included.

It was realized that *Pleurothallis disticha* A. Rich. & Galeotti was actually a species of *Lepanthes* by Garay and Schultes, who published a new combination in the latter genus in a synopsis of the Mexican *Lepanthes* (Schultes and Dillon, 1959). However, this synopsis did little more than to apply the name to a plant and include the concept in a key. Nothing was added to the scanty original description and there was no indication of examination of type material making it unclear on what basis the name was applied. Furthermore the key provided by Schultes and Dillon did not place with *L. disticha* some plants that appeared to belong there. The work reported here was designed to establish the correct identity of *Lepanthes disticha*, to determine synonymy, and to compare *L. disticha* with some similar species with blackened sheaths, short inflorescences and ovate leaves, found in Mexico and northern Central America. While the latter is an instructive grouping it is not necessarily a natural group.

METHODS

Specimens of *Lepanthes* with black sheaths from Mexico and northern Central America at AMES and AMO were examined to determine whether distinct groups existed. Type material of *Lepanthes disticha* was borrowed from P and W and critically examined. A flower bud was softened in soapy water, dissected and drawn. Photographs of the type material of *Lepanthes pristidis* Rchb.f. and the types of *Lepanthes hondurensis* Ames, *Lepanthes inaequiloba* Ames & C. Schweinf., *Lepanthes nigriscapa* R. E. Schult. & G. W. Dillon, *Lepanthes oestlundiana* R. E. Schult. & G. W. Dillon, and *Lepanthes quetzalensis* Luer & Béhar were examined to determine their relationships.

RESULTS

The following key and synonymy take into account the information discussed under each taxon in the following paragraphs. While this work accounts for all species known to us in the specified group in the region under study, other synonyms may yet be found among the taxa described from other parts of Central America and the West Indies.

Key to the *Lepanthes* species of Mexico and northern Central America which have black sheaths, ovate leaves and distichous inflorescence shorter than the leaf

- 1a. Leaves rounded-acute at the tip (sometimes somewhat acuminate upon drying); appendix of lip absent or inconspicuous from above and either reduced to a tuft of hair or with the solid portion to 0.1 mm long 2
- 2a. Lip without either a solid appendix or a tuft of hairs occupying its position; column conspicuously longer than the lip *Lepanthes inaequiloba*
- 2b. Lip either with a very short and inconspicuous appendix or the position of the appendix occupied only by a tuft of hairs; column about equal to the lip in length 3
- 3a. Lip without a solid appendix, the position of the appendix occupied by a tuft of hairs; tips of the lateral sepals divergent, the distance between the tips approximating the maximum width of the joined lateral sepals which are conspicuously wider than the dorsal sepal *Lepanthes nigriscapa*
- 3b. Lip with a very short and inconspicuous hairy appendix 0.03-0.1 mm long; distance between the tips of the lateral sepals less than their maximum width and joined lateral sepals little if any wider than the dorsal sepal 4
- 4a. Upper and lower petal lobes strongly convergent, sometimes so much as to form a cross; petals red near the proximal base of the lobes, orange or yellow elsewhere (except sometimes at tip of upper lobe, elsewhere red); connective of the lip grooved above the appendix and with a small protuberance on either side of the groove on the distal edge *Lepanthes quetzalensis*
- 4b. Upper and lower petal lobes not convergent, or slightly convergent but never so much as to form a cross; upper lobes of the petals with a narrow submarginal yellow band, otherwise red or reddish-orange; lip not prominently grooved above the appendix and the distal edge entire *Lepanthes scopula*
- 1b. Leaves acuminate (narrowed to an extended tip); appendix of lip a solid, well developed structure, conspicuous from above and 0.2-0.4 mm long 5
- 5a. Lobes of the petals broadly elliptic or rounded, approximately equal in size and shape, red around the edges and yellow centrally; appendix of the lip smooth *Lepanthes hondurensis*
- 5b. Lobes of the petals unequal, the upper oblong-ovate and larger and usually longer than the lower which are triangular and somewhat acute, the upper lobe red on the outer edge and at the base, yellow centrally, the lower lobe with a very little red along the outer edge and near the tip, otherwise yellow; appendix of the lip hairy *Lepanthes disticha*

Lepanthes disticha (A. Rich. & Galeotti) Garay & R. E. Schult., *Rhodora* 61: 6. 1959.

Pleurothallis disticha A. Rich. & Galeotti, *Ann. Sci. Nat. sér 3*, 3: 16. 1845. TYPE: MEXICO: Veracruz: Cordillera, Jun.-Oct. 1840, *H. Galeotti* 5132 (Lectotype, here designated, right-hand plant, W-Reichenbach 12768!; Isolectotypes, W-Reichenbach 54564!, 12695!, 54525!, P s.n.).

Lepanthes pristidis Rchb.f., *Linnaea* 22: 820. 1849. TYPE: MEXICO: Jalapa: *Leibold s.n.* (Holotype: W-Reichenbach!, photo AMES!).

Lepanthes oestlundiana R. E. Schult. & G. W. Dillon, *Rhodora* 61: 10, pl. 1235. 1959. TYPE: MEXICO: Veracruz: Zacuapam, 12 Feb. 1932, *Otto Nagel 2657* (Holotype: AMES 51708!).

Additional Material Examined: BELIZE: El Cayo: growing on branchlets of the highest trees, Valentin, June-July 1936, *C. L. Lundell 6267* (AMES). Toledo: 3 km SW of Machaca Forest Station on S side of road to Lagoon, 10 May 1985, *P. M. Catling & V. R. Brownell B 72.2* (AMO). GUATEMALA: Alta Verapaz: Río Sachichaj, entre Cobán y la Finca (Laguna) Santa Isabel Sapalá, 650 m, febrero 13, 1990, *G. A. Salazar, M. A. Soto & P. M. Catling s.n.* (AMO); vicinity of Laguna Sapalá (Chajvovuch), 1 mi SW of Sibicté, alt. 280 m, 11 March 1942, *J. A. Steyermark 44908* (AMES). Izabal: Cerro San Gil, along Rio Frio, alt. 75 m, 17 Dec. 1941, *J. A. Steyermark 39915* (AMES). HONDURAS: Comayagua: Pito Solo, Lake Yojoa, 2000 ft., 25 August 1932, *J. B. Edwards 98*, sub *L. hondurensis* (AMES). MEXICO: Chiapas: Ocosingo: cascadas del Río Lacanjá, 3 km SO del Centro Arqueológico Bonampak, 300 m s.n.m., selva alta perennifolia, floración continua en el campo, epífita sobre arbustos a pleno sol, flor amarilla con naranja, hojas cobrizas, marzo 1982, *M. A. Soto s.n.* (AMO). Veracruz: Totutla: Rancho Zacuapam (junto al Rancho El Mirador), ca. 2 km de Mata Oscura, 950 m s.n.m., epífita escasa, en tronco delgado de árbol con musgo, cañada de arroyo con rocas y relicto de selva mediana perennifolia junto a cafetales, hoja algo teñida de morado, sépalos amarillos, pétalos y labelo naranja con rojo, colecta 5 agosto 1987, prep. mat. cultivado 14 septiembre 1988, *G. A. Salazar 3274, 3275 & I. Aguirre* (AMO).

This is a lowland species of humid tropical and tropical montane forests. The "Alt. about 2924 m" which appears with the citation of the type in the original description of *L. oestlundiana* (Schultes and Dillon, 1959) is a mistake (and a mystery). On the label of the type sheet the altitude is given as "ca. 900 m".

The type material of *Lepanthes disticha* consists of four sheets in the Reichenbach herbarium at W and one sheet at P. Unfortunately the specimen at P consists only of a portion of a stem and a leaf, and there is no indication that there was ever any more. It bears Galeotti's label which reads "fl. roses et rouges, sur les arbres a 3000 ft, Cordillera, Veracruz, Mexico, Jun.-Oct. 1840, *H. Galeotti 5132*". The sheaths are blackish and hispidulous on the nerves and the leaf is ovate. The plate at P (plate 8, A-D) which is separate from the sheet is apparently not a *Lepanthes* and may be disregarded.

Of the four sheets at W, two have mounted specimens, while two are drawings (12695 and 54525). The specimens on the two sheets at W closely resemble each other and the fragment at P in having ovate leaves and blackish sheaths muricate (or hispidulous) on the nerves and in being approximately the same size. These specimens also resemble very closely the better of the two drawings (12695). Both sheets have whole plants with inflorescences and flowers in bud. Number 12768 has Galeotti's label with exactly the same information as the specimen at P, but with an additional slip of paper upon which is written "*Pleurothallis disticha* nob.". This specimen is most likely to have been the one seen and used by Richard and we suggest it as lectotype. Number 54564 has a piece of tracing paper with rather poor drawings of an inflorescence and a flower bud with the number "5132" written

on it as well as the label data that appears on Galeotti's partially printed labels on the sheets mentioned above. In addition this sheet has another poor drawing of a plant with an elongate rhizome, which otherwise corresponds to the specimen mounted below it. There are two labels in the lower right-hand corner of this sheet, the lower a Musei Palat. Vindob. label but the upper which reads "5132 *Pleuroth. disticha* fleurs jaunes, labelle rose, 2 à 3 fleu." appears to be an original label so that the reference to yellow flowers with a red lip is significant. The original description refers to "flor. luteis" and these references to yellow are in contrast to the "rouge et rose" which appears on the other labels.

The better of the two drawings at W (12695) has written on the lower left of the sheet upon which the drawing appears "*Pleurothallis disticha* nob." apparently in the same hand as the label on the lectotype. We believe this to be Richard's handwriting and the drawing attributable to Galeotti. The drawing includes four stems each with a leaf as well as roots. Three of the leaves have inflorescences. One of the stems and leaves is coloured and the inflorescence with the coloured leaf bears a flower. The drawing generally corresponds in size to the specimens and the coloured stem and leaf is almost exactly the same as one of the stems and leaves on W 54564, i.e., stem 88 mm tall, leaf 44 mm long. The inflorescence corresponds in length to those of the specimens and the pedicels are shown to be of similar length, i.e., 3-4 mm long. Thus the illustration appears to be drawn to natural size. The importance of this is that it provides an indication of the size of the mature flower. The illustrated flower, coloured yellow, is 5.7 mm long, the lateral sepals being 3.7 mm long and the dorsal sepal 2 mm long.

Also in the Reichenbach herbarium at W with one of Galeotti's labels is a specimen from Oaxaca (*H. Galeotti* 5294), W-Reichenbach 54565). This specimen has pale sheaths and an inflorescence with ascending pedicels less than 2 mm long. There is no name on Galeotti's label and the name "*Lepanthes disticha*" appears only on the Herb. Musei Palat. Vindob. label. Consequently this sheet, despite the label, is not to be considered type material of *Lepanthes disticha*.

Two of several buds from no. 12768 (from an inflorescence beneath the leaf) were so immature that the drawings of floral parts (Fig. 1G-J) cannot be considered to closely represent a mature flower, but nevertheless they do provide some very useful and reliable information. Most important is the fact that the lip has an appendix, contrary to the key in Schultes and Dillon (1959). Schultes and Dillon evidently thought that there was no appendix because a drawing of the lip sent to AMES (along with drawings of sepals and a petal) did not show an appendix. These drawings accompany a photo of the specimen at P, but they were made by Dr. Leslie A. Garay in 1953 from material from the Reichenbach herbarium which Garay had on loan in Toronto (L. A. Garay pers. comm.). These drawings, quite possibly made from a flower bud (subsequently lost) from the lectotype, are useful in establishing the shape of floral parts, despite the fact that they do not show the appendix. Regardless, an appendix is definitely a characteristic of the lectotype, and furthermore the appendix from one of the buds is distinctly hairy as are the apices of the lip blades. The floral parts illustrated by Garay (Fig. 1C-E) were almost certainly from a bud because the sepals are only 1-1.5 mm long.

Schultes & Dillon (1959) evidently examined tracings at AMES of drawings accompanying the type of *Lepanthes pristidis* Rchb.f. in the Reichenbach herbarium. They accepted *L. pristidis* on the basis of it having the anterior (i.e., lower) petal lobe suborbicular and the posterior lobe falcate. In fact what they interpreted as falcate posterior lobes,

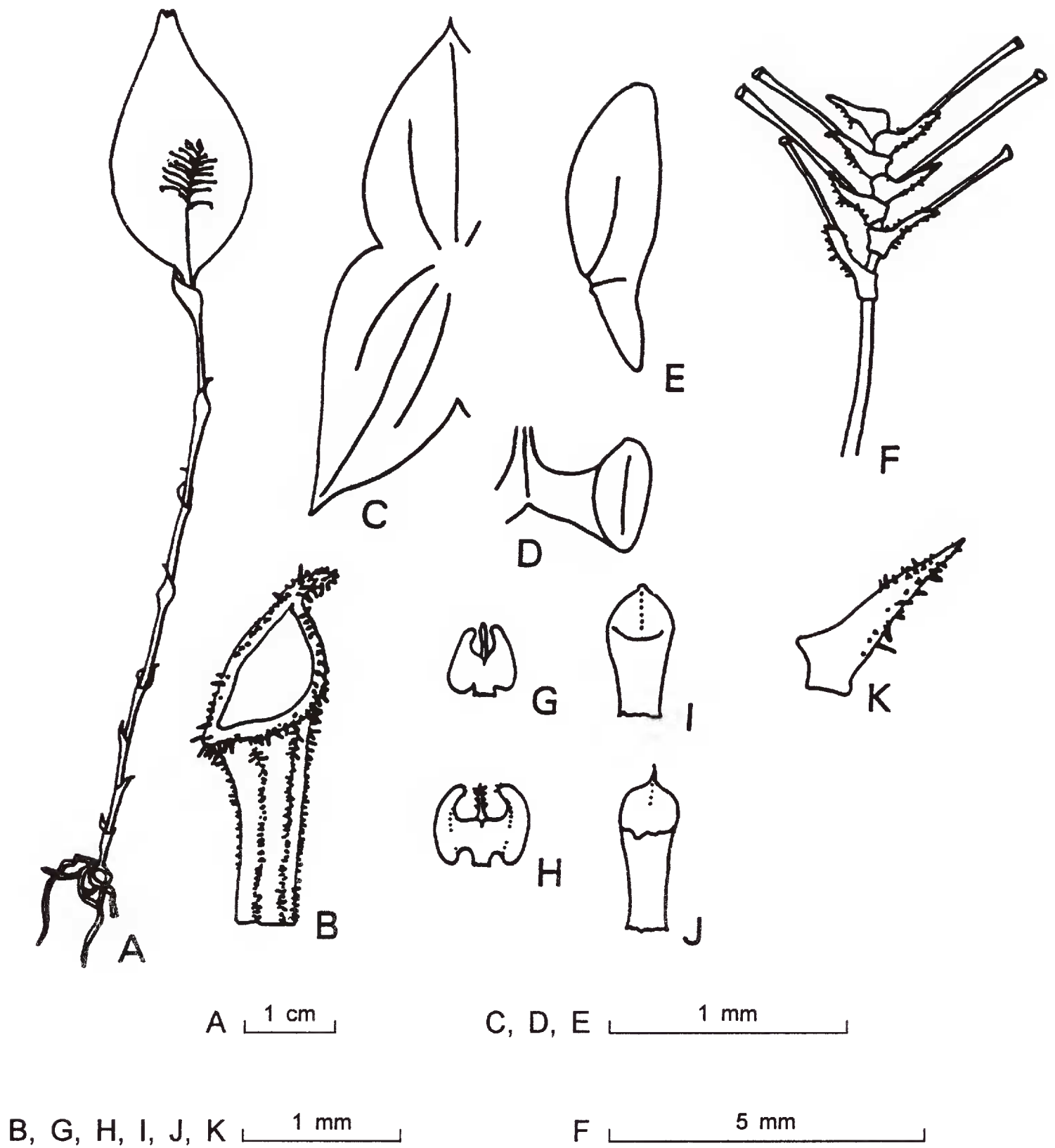


Fig. 1. Type material of *Lepanthes disticha*. A. plant (W-Reichenbach 12768 right); B. upper portion of cauline sheath (W-Reichenbach 54564 right); C-E. drawings made by L. A. Garay at AMES; C. sepals on left side of flower; D. portion of lip; E. petal; F-K. inflorescence and floral parts from flower buds (W-Reichenbach 12768 right); F. portion of inflorescence with pedicels and bracts; G-H. lips from above; I-J. columns from above; K. floral bract.

evidently in the central open flower, is the lip opened and turned backward onto the dorsal sepal. In the drawing to the lower left, the clearly oblong posterior lobes of the petals are folded onto the lateral sepals, concealing the inner floral parts. Schultes and Dillon (1959) misinterpreted these as the anterior lobes since they lie on the lateral sepals, but the fold is clear in the illustration. The distichous inflorescence, shorter than the leaf, and the blackened hispidulous sheaths suggest that this plant is definitely one of the group under study. This and the acuminate leaves suggest that *L. pristidis* is also a synonym of *Lepanthes disticha*. The reason that it does not key to *L. disticha* in Schultes and Dillon (1959) is that they believed it to be without an appendix. While it is true that the eight transcribed drawings at AMES do not show an appendix, the original drawings are nine in number and the uppermost shows the terminal portion of a lip with an appendix. An appendix is also shown in drawings of material from Cuba (*Wright 1512*) that Reichenbach f. labelled "*L. pristidis*" (W-Reichenbach). Reichenbach f. (1855, p. 151) noted that his *L. pristidis* was probably the same as *Pleurothallis disticha* (i.e., *L. disticha*) described by Richard and Galeotti, and he was frustrated by their very short and uninformative description qualifying it as "Descriptio miserrima miserabilior".

The type of *L. oestlundiana* consists of three plants on a sheet, AMES 51708, from the K. Erik M. Östlund herbarium. There are also some flowers from the type in glycerine on slides at AMES. A number of characteristics, such as the blunt-tipped column, lip with a well developed appendix (Fig. 2B), acuminate leaves and black sheaths suggest that *L. oestlundiana* is best treated as a synonym of *L. disticha*. The key in Schultes and Dillon (1959) is incorrect in suggesting that the lip of this species is without a midlobe (i.e., an appendix). Schultes and Dillon (1959) separated this species from *L. disticha* on the basis of its long-acuminate sepals and recurved lateral sepals, but the difference does not seem to be very substantial. In case where it is much more extreme, such as in *Lepanthes acuminata*, the long-acuminate shape of the sepals is a useful character, but it is not so with respect to the type of *L. oestlundiana*.

The following description of *Lepanthes disticha* was drawn from the two sheets (12768, 54564) and the better drawing (12695), all in the Reichenbach herbarium at W. The original description reads "Folio ovali-acuminato; spica parvula; flor. pedicellatis luteis distichis minimis."

Epiphytic herb, caespitose, 9.6-12.7 cm tall. Roots to at least 3 cm long and 0.6 mm in diameter. Stems monophyllous, 5.5-8.8 cm long, concealed by 7-8 funnelform sheaths: sheaths blackish, long-acute at the apex, ciliate along the reflexed margin of the mouth, hispidulous along the veins. Leaf blades ovate, somewhat acuminate, tridenticulate at the apex, glabrous, thick, green above and below, 29-44 mm long, 14-18 mm wide. Inflorescences racemose, 4-10 mm long, extending to a little more than 1/2 the length of the leaf blade at maturity, borne by a filiform peduncle up to 25 mm long arising from the stem apex within the uppermost cauline sheath, up to 3 inflorescences per stem, each producing 8-24 flowers but only 1-2 (3) flowers open at a time within an inflorescence. Floral bracts sheathing, ciliate on the back and near the apex, 1-1.3 mm long. Pedicels (2) 2.2-3.8 (4) mm long. Flowers yellow with red lip. Dorsal sepal ovate, subacute, 3-nerved, ca. 2 mm long. Lateral sepals ovate, more or less acute, ca. 3.7 mm long. Petals transversely extended into two oblong lobes, possibly ciliate, the upper lobes larger, at least 1 mm long. Lip bilobed, cordate at the base, forcipate at the apex; the apically hairy blades at least 0.5 mm long, with a sinus opposite the point of adnation with the column and a hairy appendix

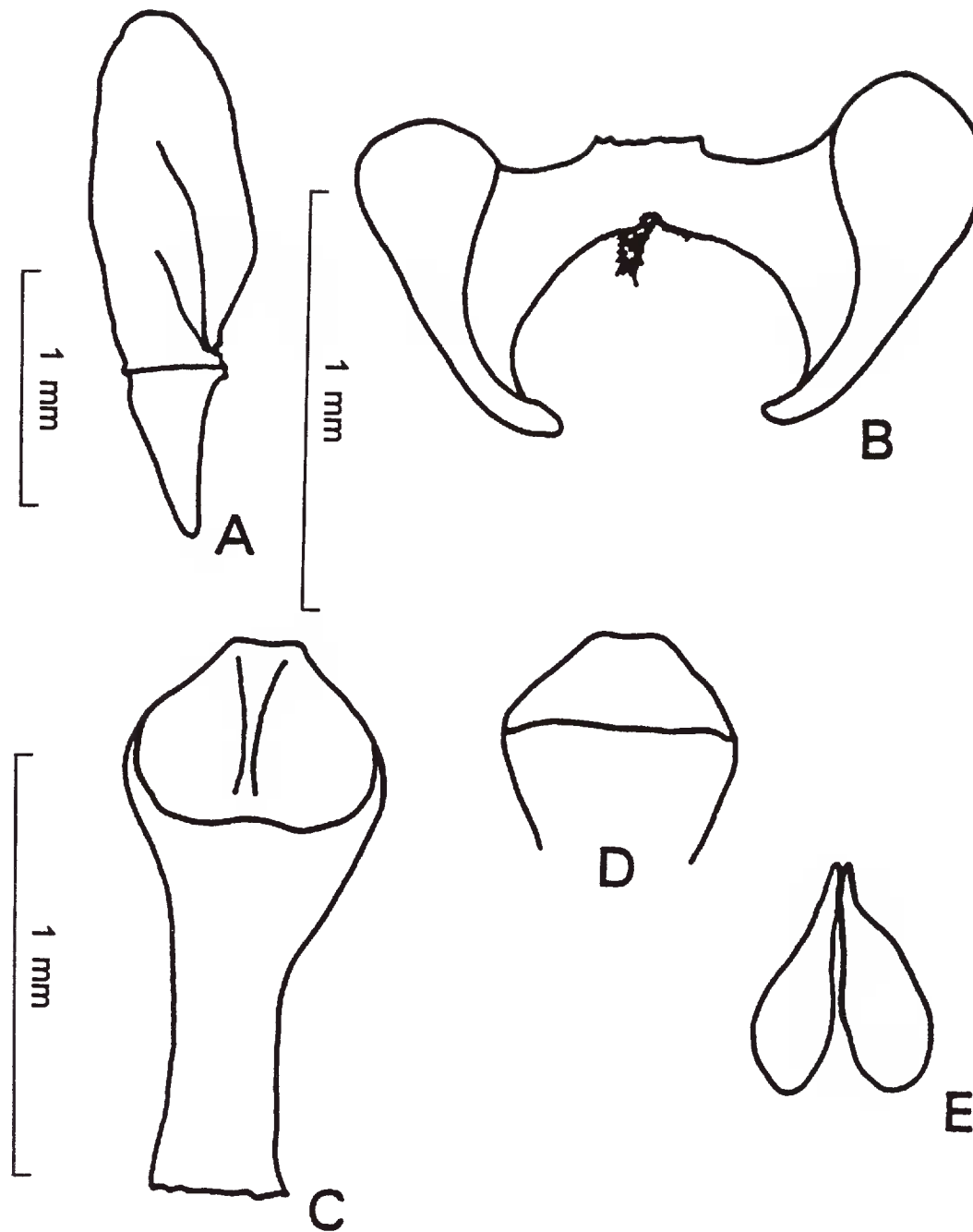


Fig. 2. Type material of *Lepanthes oestlundiana*. A. petal; B. lip from above slightly spread; C. column from above; D. tip of column from below; E. pollinia. Camera lucida drawings by P. M. Catling from flowers from the type in glycerine on a slide at AMES. The slide was prepared by R. E. Schultes who described the species.

at least 0.25 mm long below the sinus. Column at least 0.8 mm long, the stigma apparently ventral. Pollinarium at least 0.5 mm long, yellow.

Based on what is known about the distinctive features of *Lepanthes*, *L. disticha* has the following combination of characters that are useful in identifying it: It is a medium sized plant with ovate leaves, black hispidulous sheaths, an inflorescence shorter than the leaves with relatively long pedicels, and a lip with a fairly prominent appendix. We can be certain that the appendix is well developed and that it and the apices of the blades of the lip are ciliate. Reference to "eciliate petals" by Schultes and Dillon (1959) is probably based on the drawings sent by Garay (see above) which do not show hairs.

To the description of *L. disticha* based on the type material we can add some information obtained from complete living specimens. The leaves often are suffused with copper-brown, the petals are entirely papillose, with the margins more conspicuously ciliate, the lip is papillose, with short hairs at the apices of the blades, and the blades are comma-shaped and flat. The appendix is linear, shortly pubescent near the apex, incurved and 0.2-0.25 mm long.

Material of this species was the basis for reports of various other species in Mexico and northern Central America. The material from Guatemala was determined and reported as *L. turialvae* Rchb.f. (Ames and Correll, 1952), the identity of the latter species having been recently established by Luer (1987).

Lepanthes scopula Schltr., Feddes Repert. 10: 356. 1912. TYPE: GUATEMALA: Alta Verapaz: Cobán, 1350 m, September 1907, *H. von Türckheim II-1840* (Lectotype designated by P. M. Catling [1990]: US!; Isolectotype: AMES!).

This species was described and illustrated by Catling (1990). Incomplete specimens probably best referred to this species are part of the basis for reports of *L. turialvae* from Guatemala (Ames and Correll, 1952).

Lepanthes inaequiloba Ames & C. Schweinf., Sched. Orch. 10: 46. 1930. TYPE: COSTA RICA: Province of San José: Laguna de la Chonta, northeast of Santa María de Dota, 2000-2100 m altitude, December 18, 1925, *P. C. Standley 42304* (Holotype: AMES!).

The holotype includes 3 plants, one with a flower and an additional flower in a packet. A third flower, illustrated in Fig. 3D-F, was removed from the middle part (vertically on the sheet) but remains with the sheet in a sealed glass bottle.

The specimens providing the basis for the report of *L. inaequiloba* from Belize (*Lundell 6267*) were referred to *L. disticha* (Catling and Catling, 1988) on the basis of the smaller flower size of the latter species. Now that a flower from the type of *L. inaequiloba* has been examined we have additional support for this decision. This flower (Fig. 3D-F) has a lip with very elongated blades and entirely lacks an appendix. This is in direct contrast to a lip from the Belizean collection (Fig. 3A-C). The flower of *L. inaequiloba* also differs in other ways, such as the less divergent lateral sepals, relatively long column and relatively small lower petal lobes. The Belizean plant (*Lundell 6267*) is clearly referable to *L. disticha* in having a lip with a ciliate appendix, lateral sepals divergent, leaves acuminate and similar flower colour, although the width of the yellow stripe on the upper petal lobe is subject to some variation. It matches specimens from Mexico, Honduras and Guatemala closely (see material cited above).

Lepanthes hondurensis Ames, Proc. Biol. Soc. Wash. 44: 43. 1931. TYPE: HONDURAS: Atlántida: Lancetilla Valley, near Tela, 11 March 1923, *O. Ames II.171* (Holotype: AMES!).

Additional Material Examined: HONDURAS; Dept. Cortés: Rio Lindo, 13 Sept. 1933, *J. B. Edwards 230* (AMES).

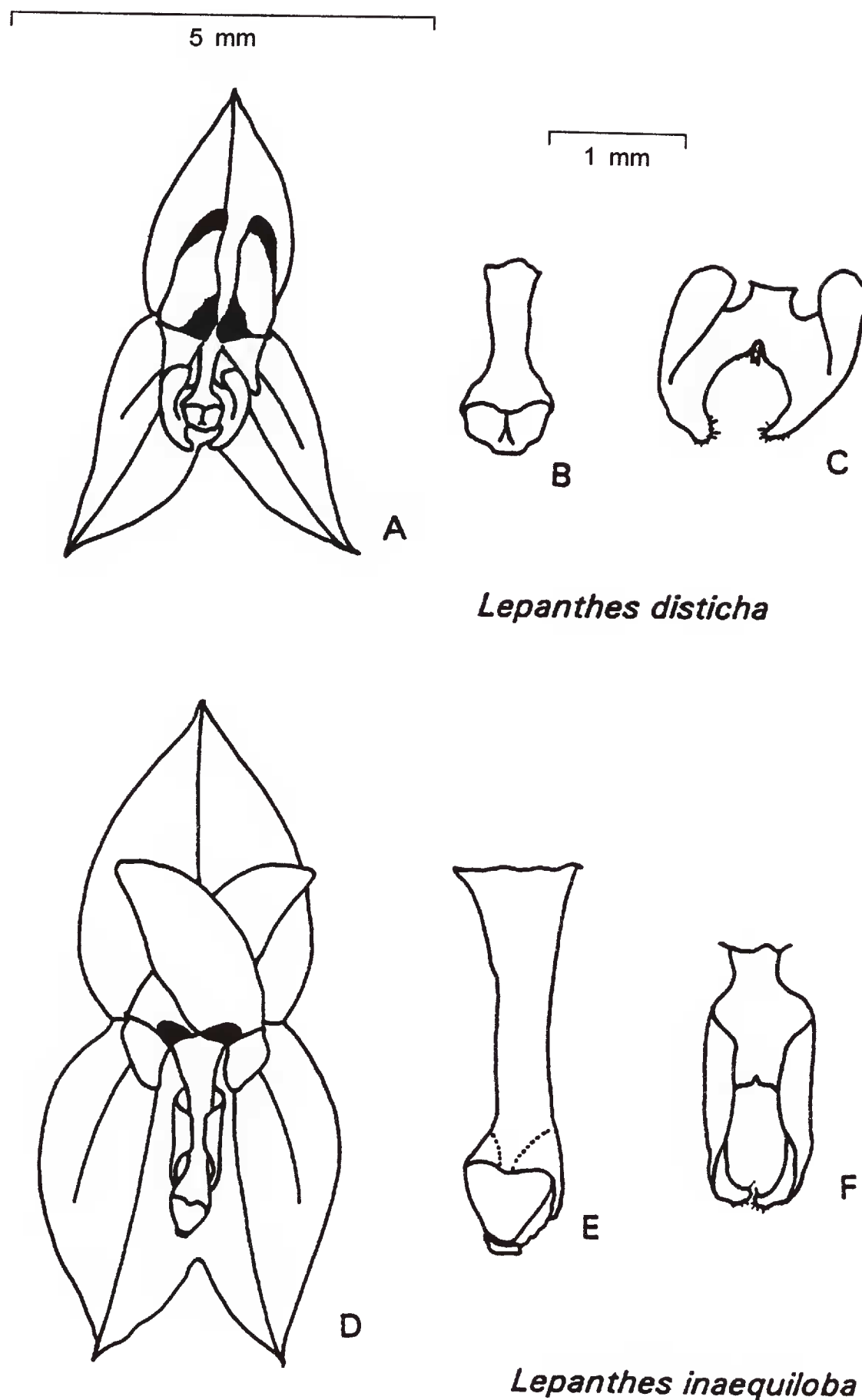


Fig. 3. Flowers, columns and lips of *Lepanthes disticha* (A-C) and *Lepanthes inaequiloba* (D-F). Based on camera lucida drawings by P. M. Catling made from material from Lundell 6267 (AMES) for *L. disticha* and from Standley 42304 (AMES), type of *L. inaequiloba*.

Lepanthes hondurensis is also a member of the group under study. The type material of this concept at AMES is ample and includes both sheets and flowers from the type in bottle 262 in the spirit collection. The leaves are acuminate and the appendix is well developed. Consequently this species seems closely allied to *L. disticha*, but is maintained because of its distinctive petals, flower colour and non-ciliate appendix.

The additional specimen cited above was not listed by Ames with the original description or later (Ames, 1933). This species was well illustrated by Blanche Ames in an article by Oakes Ames (Ames, 1933). Additional illustrations of *Edwards 603* from bottle 262 in the spirit collection at AMES are shown in Fig. 4. To the relatively good original description it may be added that: the stems are 5-9 cm long with 5-9 blackened sheaths which are muricate at the mouth to muriculate on the veins; the leaves are ovate and acuminate, (12) 30-50 mm long and (8) 13-22 mm wide; the inflorescence is 10-25 mm long and extends 1/3-2/3 the length of the leaf; the pedicellate ovary of a peak flower is 2-4 mm long; a ripened capsule is ca. 4.5 mm long and up to 3 mm wide.

Lepanthes nigriscapa R. E. Schult. & G. W. Dillon, *Rhodora* 61: 8, pl. 1235. 1959. TYPE: MEXICO: Oaxaca: Pacific slopes, NW of Pluma Hidalgo, near coffee plantation Copalita, alt. about 1100 m, 19 October 1936, O. Nagel & Juan G.[onzález] 6441 (Holotype: AMES!).

The type of *L. nigriscapa* includes one large plant and a fragment of two others on sheet 51713 at AMES as well as flowers from the type in bottle 2508 in the spirit (alcohol) collection at AMES. The type has black sheaths, as the epithet implies, and is part of the group under study as is clear from the illustration in Schultes and Dillon (1959, plate 1235). All of the leaves on the type sheet are rounded-acute and the lip is entirely without an appendix, there being only a tuft of hairs in the usual position of the appendix (Fig. 5). Thus the material resembles closely *L. scopula* Schltr. which has been recently illustrated and lectotypified (Catling, 1990). However, the extreme apices of the upper petal lobes from the type of *L. nigriscapa* are rounded whereas in *L. scopula* they are often rather pointed. There is substantial variation within *L. scopula* with respect to the shape of the petals. For example, a flower illustrated by Catling (1990, Fig. 9) with rather pointed lobes, like the lectotype and corresponding to a flower from a Mexican plant (Catling, 1990, Fig. 10) is from the same plant as a flower with shorter and rounded lobes (Catling, 1990, Fig. 4) which approaches the type of *L. nigriscapa* (Fig. 6) in this respect.

It is to be noted that the type material of *L. nigriscapa* is variable in length of the lower petal lobe, that shown in Fig. 6 being much larger than illustrated by Dillon in plate 1235 accompanying the original description (Schultes and Dillon, 1959). Another important thing to note is that the column in the flowers of *L. nigriscapa* appears relatively long, yet this is to some extent a consequence of its orientation parallel to the sepals, rather than perpendicular, in the flowers examined.

There are two important characteristics by which the type material of *L. nigriscapa* differs from both *L. scopula* and *L. quetzalensis*. Firstly the lateral sepals of *L. nigriscapa* are divergent, the distance between their tips approximating their maximum width. In *L. scopula* and *L. quetzalensis* the lateral sepals are not very divergent, the distance between their tips being much less than their maximum width. The lateral sepals of *L. nigriscapa* also differ in being much wider than dorsal sepal. Secondly, there is no appendix in the

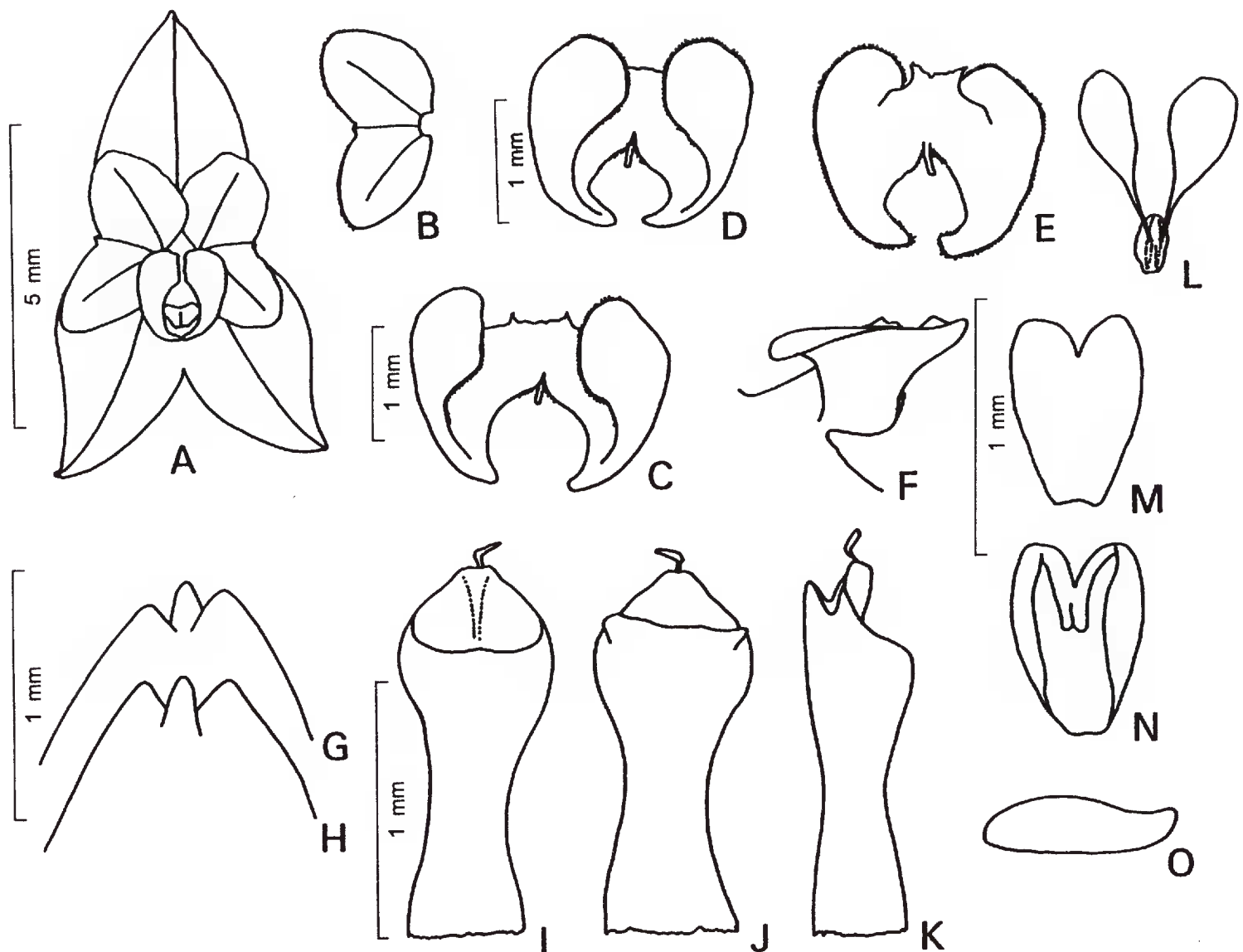


Fig. 4. *Lepanthes hondurensis* from Edwards 603 in bottle 262 in the spirit collection at AMES. A. flower from above; B. petal; C-D. lips from above; E. lip from below; F. lip from side; G. tip of leaf from above; H. tip of leaf from below; I. column from above; J. column from below; K. column from side; L. pollinarium; M. anther cap from above; N. anther cap from below; O. anther cap from side. Camera lucida drawings by P. M. Catling.

preserved type material of *L. nigriscapa*, only a minute tuft of hairs. Although the appendix is almost reduced to a tuft of hairs in *L. scopula* and *L. quetzalensis*, it is not totally so as claimed previously for *L. scopula* (Catling, 1990) since there is a solid structure 0.03-0.1 mm long in these two species. In *L. scopula* it does vary, but is most often 0.05-0.09 mm long, the 0.03 and 0.1 being unusual extremes based on examination of flowers from 40 plants from Guatemala. The divergent sepals and complete lack of an appendix suggest that *L. nigriscapa* should be maintained as distinct from *L. scopula* and *L. quetzalensis*, but additional information on variation in the plants from the southern sierra of Oaxaca may yet provide reason to treat it as a synonym. Unfortunately recent attempts to relocate the species at and near to the type locality have failed.

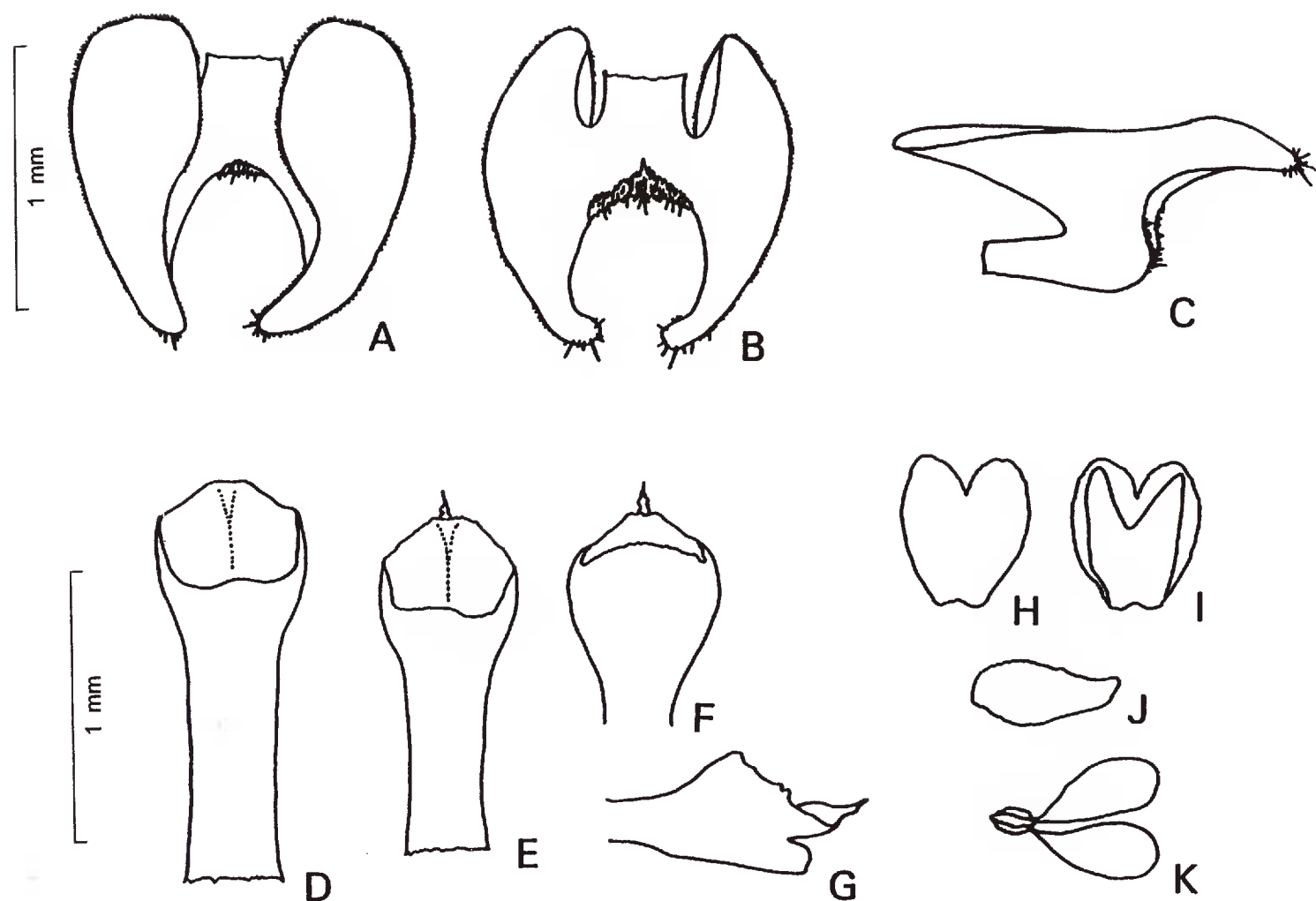


Fig. 5. Type material of *Lepanthes nigriscapa*. Floral parts drawn from *Nagel* 6441, the type material in bottle 2508 in the spirit collection at AMES. A. lip from above; B. lip from below; C. lip from the side; D-E. columns from above; F. tip of column from below; G. tip of column from side; H. anther cap from above; I. anther cap from below; J. anther cap from side; K. pollinarium. Camera lucida drawings by P. M. Catling.

Lepanthes quetzalensis Luer & Béhar, *Lindleyana* 5: 194, 198, fig. 1990. TYPE: GUATEMALA: Baja Verapaz: near Quetzal Preserve between Cobán and Union Barrios, alt. 1600 m, 11 Feb. 1990, *M. Béhar, J. Luer & C. Luer* (Holotype: MO!).

The holotype at MO includes only one plant with two flowers and the dissected parts of the flower from which the drawings accompanying the original description were made in a small bottle of spirit. In its non-divergent and relatively narrow lateral sepals, the flowers resemble those of *L. scopula*. The rounded-acute leaf tips are also much like those of *L. scopula* and the sheaths are blackish like those of other species included here. The small appendix 0.09 mm long in the preserved flower from which the illustration provided by Luer

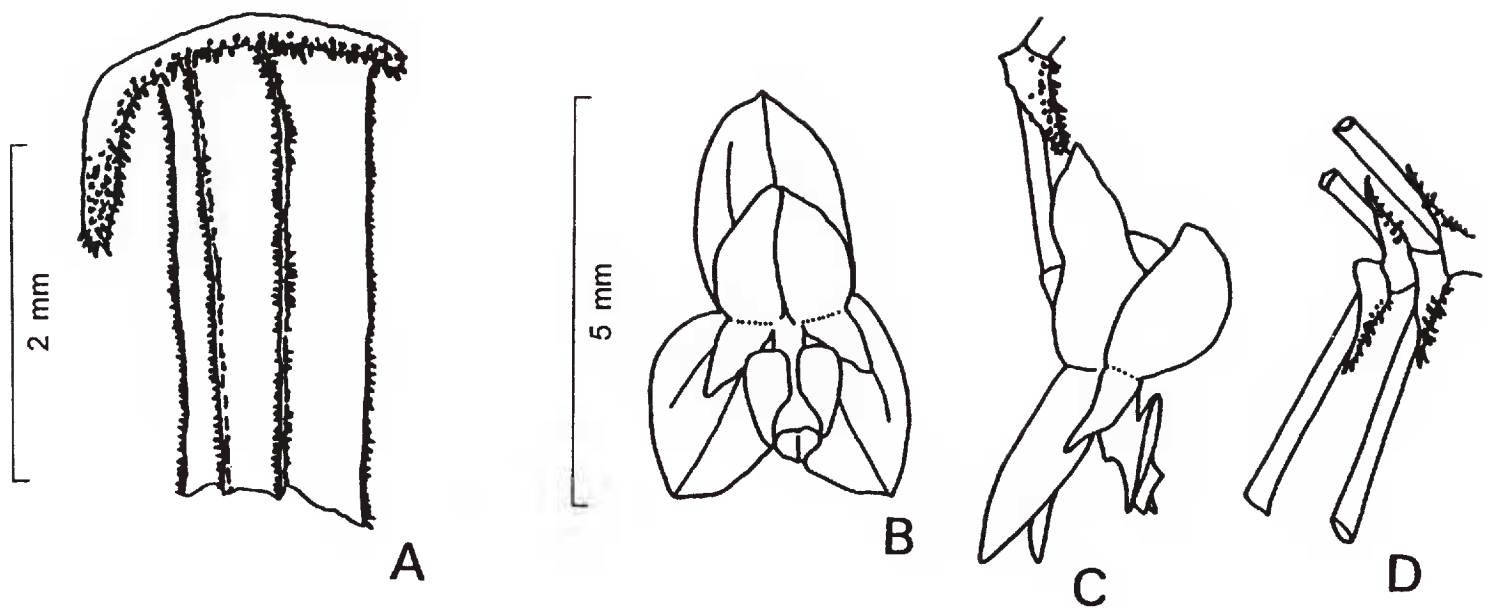


Fig. 6. Type material of *Lepanthes nigriscapa*. A. portion of cauline sheath (from Nagel 6441, AMES 51713); B-D. flowers and inflorescence from the type material in bottle 2508 in the spirit collection at AMES; B. flower from above; C. flower from side; D. portion of inflorescence. Camera lucida drawing by P. M. Catling.

(1990) was made, is comparable to that of larger examples of *L. scopula*. Unlike *L. scopula*, however, the petal lobes are somewhat convergent, sometimes to the extent of forming a cross, the papillae on the petal lobes are in lines along the length of the lobe, and the connective of the lip is grooved above the appendix, the edges of the groove becoming two small protuberances on the distal edge of the connective. As noted by Luer and Béhar (in Luer, 1990), the lower apices of the lip blades also tend to be downcurved and they are more downcurved in the few examples that we have examined than in *L. scopula*.

Examination of preserved material from Guatemala suggests that the distinctive features of the type material, including the lines of papillae on the petal lobes, are reliable.

Lepanthes quetzalensis is probably the same as what Hamer (1974) referred to *L. costaricensis* from El Salvador, but it is less clear that it is the same as what he referred to *L. costaricensis* from Nicaragua (Hamer, 1984). There is an illustration at AMES of Schlechter's type of *L. costaricensis* which was at Berlin and which was evidently destroyed. The floral analysis (column, lip and petal) accompanying the specimens do not seem to be very informative. The relationships between this and various other similar species occurring further to the south in Central America warrants further study. Most of the relevant names are listed by Luer (1987).

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